

[0036] Having thus described the invention, what is claimed is:

- 1 1. A crop-harvesting header arranged to be supported by the forward end of
- 2 a tractor and comprising in combination:
  - 3 a main frame of substantial width and having a front end and opposing
  - 4 rear end, an upper portion and an opposing lower portion, and opposing lateral
  - 5 sides;
  - 6 a mechanism attachable to a tractor and connected to said main frame to
  - 7 support said main frame for vertical movement relative to the ground;
  - 8 a sickle bar assembly including at least one sickle bar, said assembly
  - 9 supported by the lower portion of said frame and extending between said lateral
  - 10 sides thereof to cut a swath substantially as wide as said main frame;
  - 11 a consolidating auger extending horizontally between said lateral sides of
  - 12 said main frame, said auger having oppositely spiraled helical flights extending
  - 13 inwardly from opposite ends thereof and a central axial shaft about which said
  - 14 auger rotates;
  - 15 an arcuate shield adjacent the lower and rearward portions of said auger
  - 16 to guide cut and consolidated crop material rearwardly; and
  - 17 a modular wobble drive removably affixed to one of said lateral sides and
  - 18 said at least one sickle bar and comprising:
    - 19 an open housing having a first opening therethrough with a first pair
    - 20 of precision machined bearing shoulders on each side of said first opening;
    - 21 a bent-axis wobble shaft extending through said first opening and
    - 22 supported therein by a first pair of precision bearings, one fitted within each
    - 23 of said first pair of precision machined bearing shoulders, said bent-axis
    - 24 wobble shaft having a first and a second shaft portion, each with a
    - 25 longitudinal axis, the two of which intersect but are not parallel;
    - 26 a wobble hub having an elongate tube-shaped body with a central
    - 27 axis and a second pair of precision machined bearing shoulders spaced
    - 28 apart along said central axis;

1                   said second shaft portion of said bent-axis wobble shaft extending  
2                   through said tube-shaped body of said wobble hub and supported therein by  
3                   a second pair of precision bearings, one fitted within each of said second  
4                   pair of precision machined bearing shoulders;

5                   said tube-shaped body of said wobble hub further having a pair of  
6                   opposing precision machined bearing surfaces protruding from the outer  
7                   surface of said body;

8                   a Y-shaped wobble yoke with the cupped portion fitting part way  
9                   around said tube-shaped body of said wobble hub and movably supported  
10                  thereto by a third pair of precision bearings, one affixed to each of said  
11                  bearing surfaces, the leg portion supported by a single precision bearing  
12                  affixed to said open housing;

13                  said open housing, bent-axis wobble shaft, wobble hub and wobble  
14                  yoke so arranged that rotation of said first portion of said bent-axis wobble  
15                  shaft results in reciprocating movement of said leg portion of said wobble  
16                  yoke.

17                  .

1    2.    The crop-harvesting header of Claim 1, wherein:

2                  said first and second pairs of precision bearings are tapered roller  
3                  bearings.

1    3.    The crop-harvesting header of Claim 2, wherein:

2                  said third pair of precision bearings are needle bearings.

1    4.    The crop-harvesting header of Claim 3, wherein:

2                  Said sickle bar assembly includes two opposing sickle bars, each with its  
3                  own modular wobble drive.

1    5.    In a crop-harvesting header arranged to be supported by the forward end  
2    of a tractor, said header comprising:  
3                a main frame of substantial width and having a front end and opposing  
4    rear end, an upper portion and an opposing lower portion, and opposing lateral  
5    sides;  
6                a mechanism attachable to a tractor and connected to said main frame to  
7    support said main frame for vertical movement relative to the ground;  
8                a sickle bar assembly including at least one sickle bar, said assembly  
9    supported by the lower portion of said frame and extending between said lateral  
10   sides thereof to cut a swath substantially as wide as said main frame;  
11               a consolidating auger extending horizontally between said lateral sides of  
12   said main frame, said auger having oppositely spiraled helical flights extending  
13   inwardly from opposite ends thereof and a central axial shaft about which said  
14   auger rotates;  
15               an arcuate shield adjacent the lower and rearward portions of said auger  
16   to guide cut and consolidated crop material rearwardly; and  
17               a modular wobble drive removably affixed to one of said lateral sides and  
18   said at least one sickle bar, the improvement in said wobble drive comprising:  
19               an open housing having a first opening therethrough with a first pair  
20   of precision machined bearing shoulders on each side of said first opening;  
21               a bent-axis wobble shaft extending through said first opening and  
22   supported therein by a first pair of precision bearings, one fitted within each  
23   of said first pair of precision machined bearing shoulders, said bent-axis  
24   wobble shaft having a first and a second shaft portion, each with a  
25   longitudinal axis, the two of which intersect but are not parallel;  
26               a wobble hub having an elongate tube-shaped body with a central  
27   axis and a second pair of precision machined bearing shoulders spaced  
28   apart along said central axis;  
29               said second shaft portion of said bent-axis wobble shaft extending  
30   through said tube-shaped body of said wobble hub and supported therein by

31 a second pair of precision bearings, one fitted within each of said second  
32 pair of precision machined bearing shoulders;  
33                   said tube-shaped body of said wobble hub further having a pair of  
34 opposing precision machined bearing surfaces protruding from the outer  
35 surface of said body;  
36                   a Y-shaped wobble yoke with the cupped portion fitting part way  
37 around said tube-shaped body of said wobble hub and movably supported  
38 thereto by a third pair of precision bearings, one affixed to each of said  
39 bearing surfaces, the leg portion supported by a single precision bearing  
40 affixed to said open housing;  
41                   said open housing, bent-axis wobble shaft, wobble hub and wobble  
42 yoke so arranged that rotation of said first portion of said bent-axis wobble  
43 shaft results in reciprocating movement of said leg portion of said wobble  
44 yoke.  
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1 8. The crop-harvesting header of Claim 7, wherein:  
2                   said first and second pairs of precision bearings are tapered roller  
3 bearings.

1 9. The crop-harvesting header of Claim 8, wherein:  
2                   said third pair of precision bearings are needle bearings.

1 10. The crop-harvesting header of Claim 9, wherein:  
2 Said sickle bar assembly includes two opposing sickle bars, each with its own  
3 modular wobble drive.

1 11. A modular wobble drive for a sickle bar crop harvesting mechanism,  
2 comprising:  
3

4           an open housing having a first opening therethrough with a first pair of  
5   precision machined bearing shoulders on each side of said first opening;  
6           a bent-axis wobble shaft extending through said first opening and  
7   supported therein by a first pair of precision bearings, one fitted within each of  
8   said first pair of precision machined bearing shoulders, said bent-axis wobble  
9   shaft having a first and a second shaft portion, each with a longitudinal axis, the  
10   two of which intersect but are not parallel;  
11           a wobble hub having an elongate tube-shaped body with a central axis  
12   and a second pair of precision machined bearing shoulders spaced apart along  
13   said central axis;  
14           said second shaft portion of said bent-axis wobble shaft extending through  
15   said tube-shaped body of said wobble hub and supported therein by a second  
16   pair of precision bearings, one fitted within each of said second pair of precision  
17   machined bearing shoulders;  
18           said tube-shaped body of said wobble hub further having a pair of  
19   opposing precision machined bearing surfaces protruding from the outer surface  
20   of said body;  
21           a Y-shaped wobble yoke with the cupped portion fitting part way around  
22   said tube-shaped body of said wobble hub and movably supported thereto by a  
23   third pair of precision bearings, one affixed to each of said bearing surfaces, the  
24   leg portion supported by a single precision bearing affixed to said open housing;  
25           said open housing, bent-axis wobble shaft, wobble hub and wobble yoke  
26   so arranged that rotation of said first portion of said bent-axis wobble shaft  
27   results in reciprocating movement of said leg portion of said wobble yoke.

- 1   12.   The crop-harvesting header of Claim 11, wherein:
  - 2        said first and second pairs of precision bearings are tapered roller
  - 3        bearings.
- 1   13.   The crop-harvesting header of Claim 12, wherein:
  - 2        said third pair of precision bearings are needle bearings.

1    14. The crop-harvesting header of Claim 13, wherein:  
2            said sickle bar assembly includes two opposing sickle bars, each with its  
3            own modular wobble drive.